GE ELECTRONICS

6BK7-B

TWIN TRIODE

DESCRIPTION AND RATING

The 6BK7-B is a miniature twin triode designed primarily for use as a cascode amplifier at frequencies below approximately 300 megacycles. It is especially useful as the radio-frequency amplifier in very-high-frequency television tuners or as the intermediate-frequency preamplifier in ultra-high-frequency tuners. Its performance as a cascode amplifier is characterized by high gain and low noise figure. Electrically and physically, the 6BK7-B is a replacement for the 6BK7 and the 6BK7-A.

GENERAL

ELECTRICAL

Cathode—Coated Unipotential		
Heater Voltage, AC or DC	6.3	Volts
Heater Current	0.45	Amperes
Heater Warm-up Time*	11	Seconds

MECHANICAL

Mounting Position—Any
Envelope—T-6½, Glass
Base—E9-1, Small Button 9-Pin

Direct Interelectrode Capacitances†	Section 1		Section 2	
Grid to Plate: (g to p)	1.8		1.8	pf
Input: g to (h+k)	3.0		3.0	pf
Output: p to (h+k)	1.0		0.9	pf
Heater to Cathode: (h to k)	2.8		3.0	pf
Grid to Grid: (1g to 2g), maximum		0.004		pf
Plate to Plate: (1p to 2p), maximum		0.075		pf
Plate to Cathode: (p to k)	0.22		0.22	pf
Grounded-Grid Input: k to (h+g)	6.0		6.0	pf
Grounded-Grid Output: p to (h+g)	2.4		2.4	pf

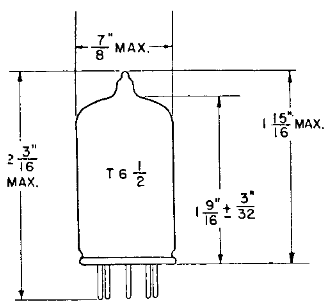
MAXIMUM RATINGS

DESIGN-CENTER VALUES, EACH SECTION

Plate Voltage	300	Volts
Negative DC Grid Voltage	50	Volts
Plate Dissipation	2.7	Watts

Heater-Cathode Voltage		
Heater Positive with Respect to Cathode		
DC Component	100	Volts
Total DC and Peak	200	Volts
Heater Negative with Respect to Cathode		
Total DC and Peak	200§	Volts

PHYSICAL DIMENSIONS



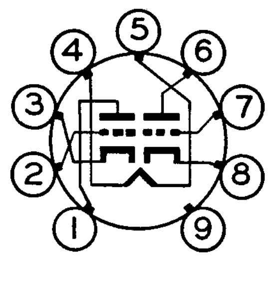
EIA 6–2

EIA 6-2

TERMINAL CONNECTIONS

Pin 1—Plate (Section 2)
Pin 2—Grid (Section 2)
Pin 3—Cathode (Section 2)
Pin 4—Heater
Pin 5—Heater
Pin 6—Plate (Section 1)
Pin 7—Grid (Section 1)
Pin 8—Cathode (Section 1)
Pin 9—Internal Shield‡

BASING DIAGRAM



EIA 9AJ

CHARACTERISTICS AND TYPICAL OPERATION

CLASS A$_1$ AMPLIFIER, EACH SECTION

Plate Voltage	150	Volts
Cathode-Bias Resistor	56	Ohms
Amplification Factor	43	
Plate Resistance, approximate	4600	Ohms
Transconductance	9300	Micromhos
Plate Current	18	Milliamperes
Grid Voltage, approximate Ib = 10 Microamperes	−11	Volts
Noise Figure π	7	Decibels

* The time required for the voltage across the heater to reach 80 percent of its rated value after applying 4 times rated heater voltage to a circuit consisting of the tube heater in series with a resistance equal to 3 times the rated heater voltage divided by the rated heater current.

† Without external shield.

‡ It is recommended that pin 9 be grounded.

§ When the tube is used as a cascode amplifier and the two sections are connected in series, this voltage may be as high as 300 volts maximum under cutoff conditions.

π As measured in a cascode amplifier which has a balanced 300-ohm input system and which operates at a plate supply voltage of 250 volts, a plate current of 18 milliamperes, a frequency of 200 megacycles, a stage bandwidth of 7 megacycles, and an effective noise bandwidth of 3.5 megacycles.

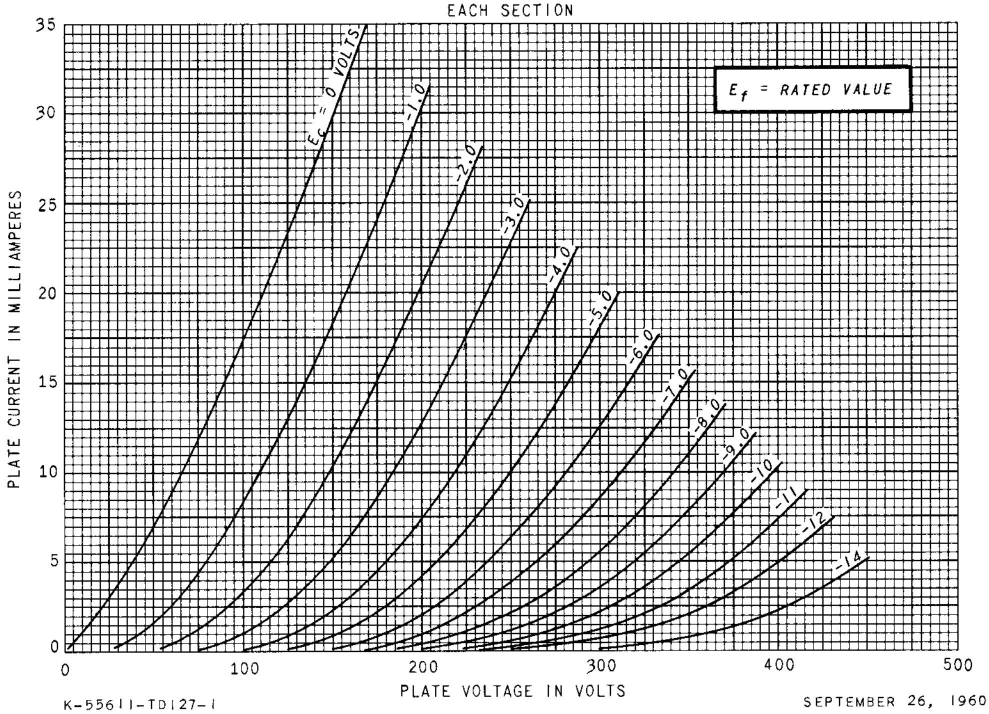
Design-Center ratings are limiting values of operating and environmental conditions applicable to a bogey electron tube of a specified type as defined by its published data and should not be exceeded under normal conditions.

The tube manufacturer chooses these values to provide acceptable serviceability of the tube in average applications, making allowance for normal changes in operating conditions due to rated supply-voltage variation, equipment component variation, equipment control adjustment, load variation, signal variation, environmental conditions, and variations in the characteristics of the tube under consideration and of all other electron devices in the equipment.

The equipment manufacturer should design so that initially no design-center value for the intended service is exceeded with a bogey tube under normal operating conditions at the stated normal supply voltage.

AVERAGE PLATE CHARACTERISTICS

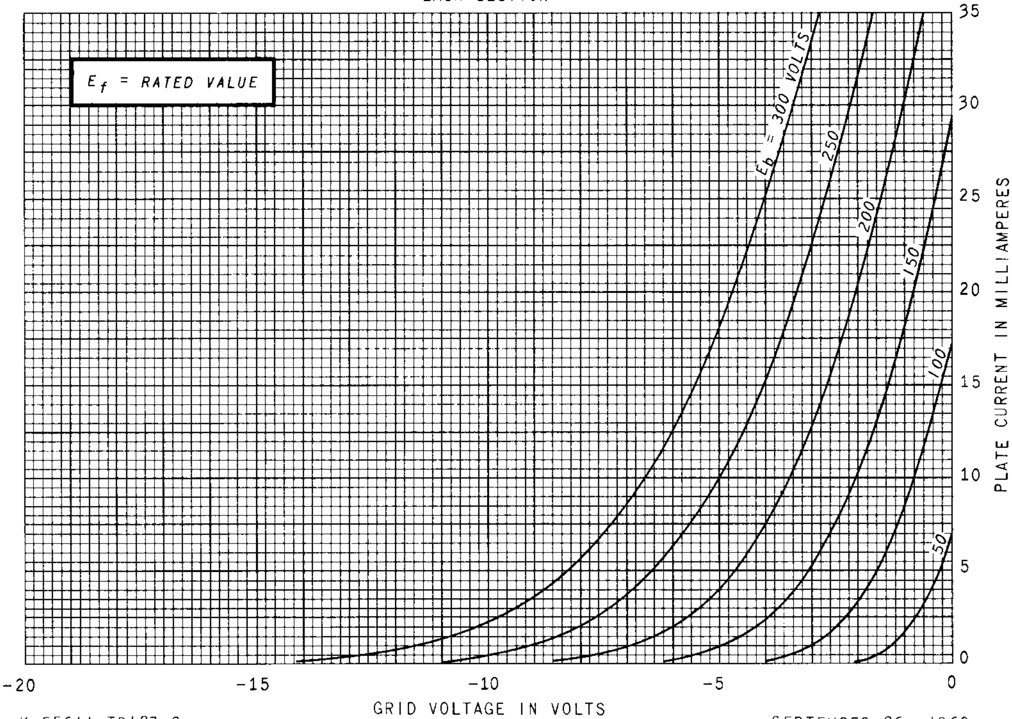
EACH SECTION



K-55611-TD127-1 SEPTEMBER 26, 1960

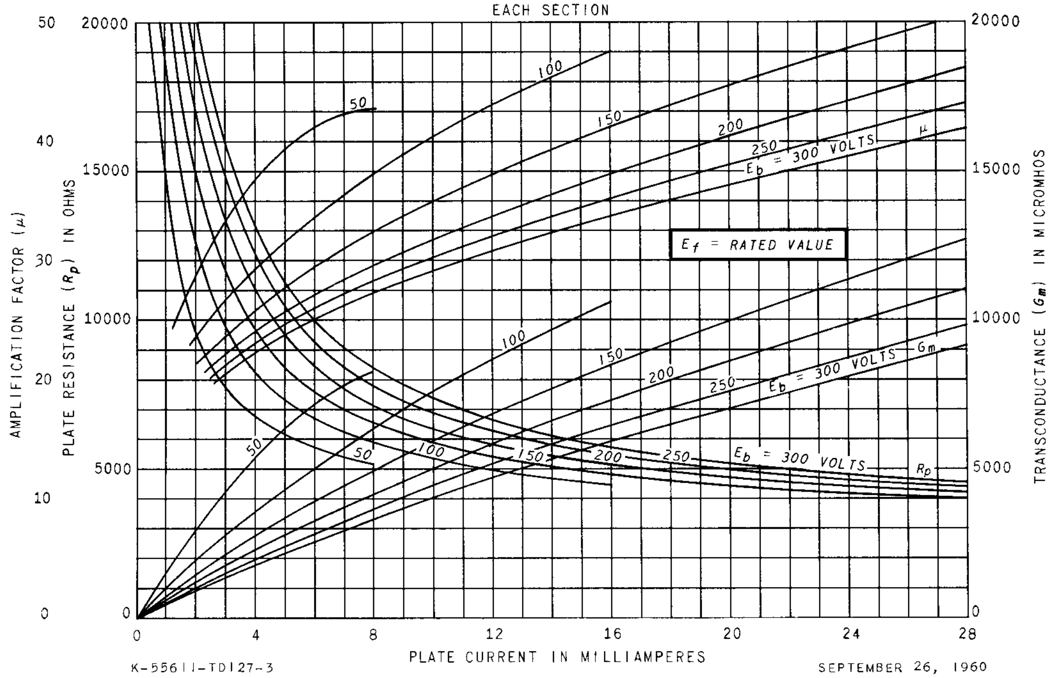
AVERAGE TRANSFER CHARACTERISTICS

EACH SECTION

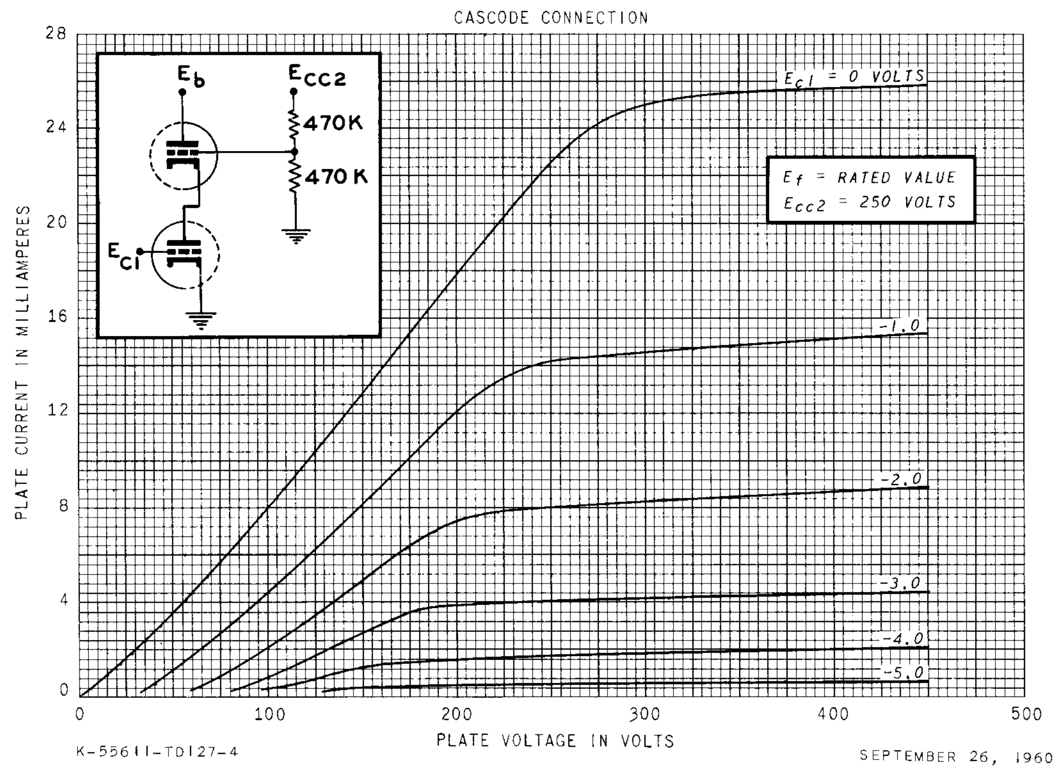


K-55611-TD127-2 SEPTEMBER 26, 1960

AVERAGE CHARACTERISTICS

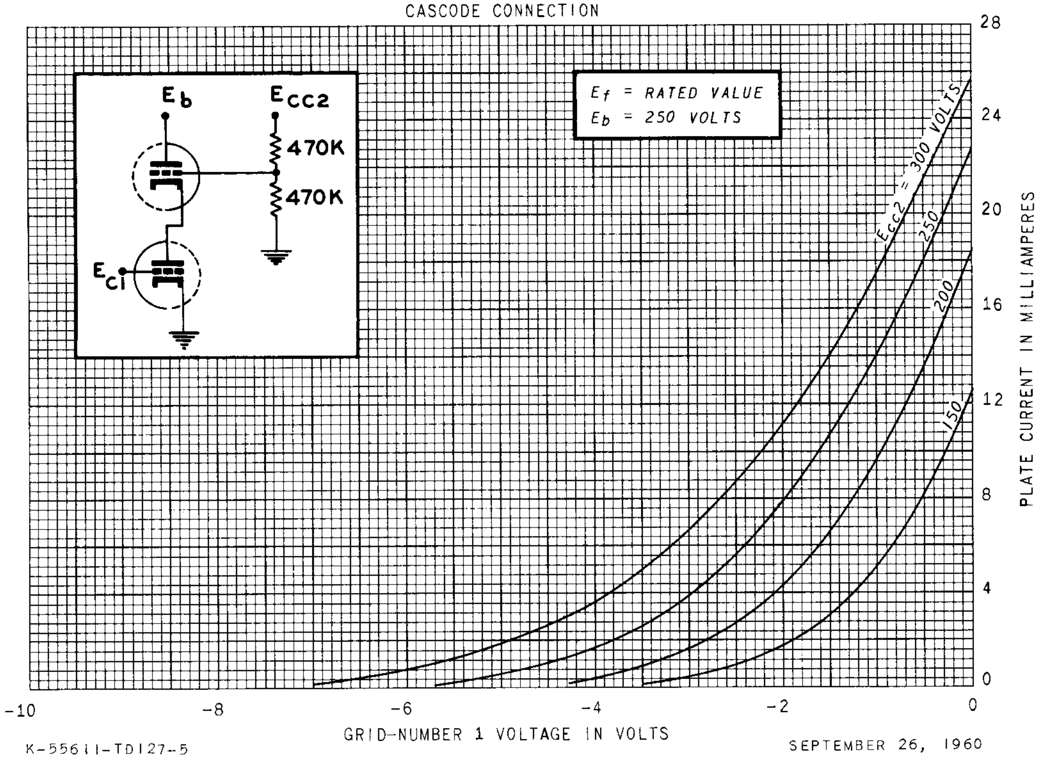


AVERAGE PLATE CHARACTERISTICS



AVERAGE TRANSFER CHARACTERISTICS

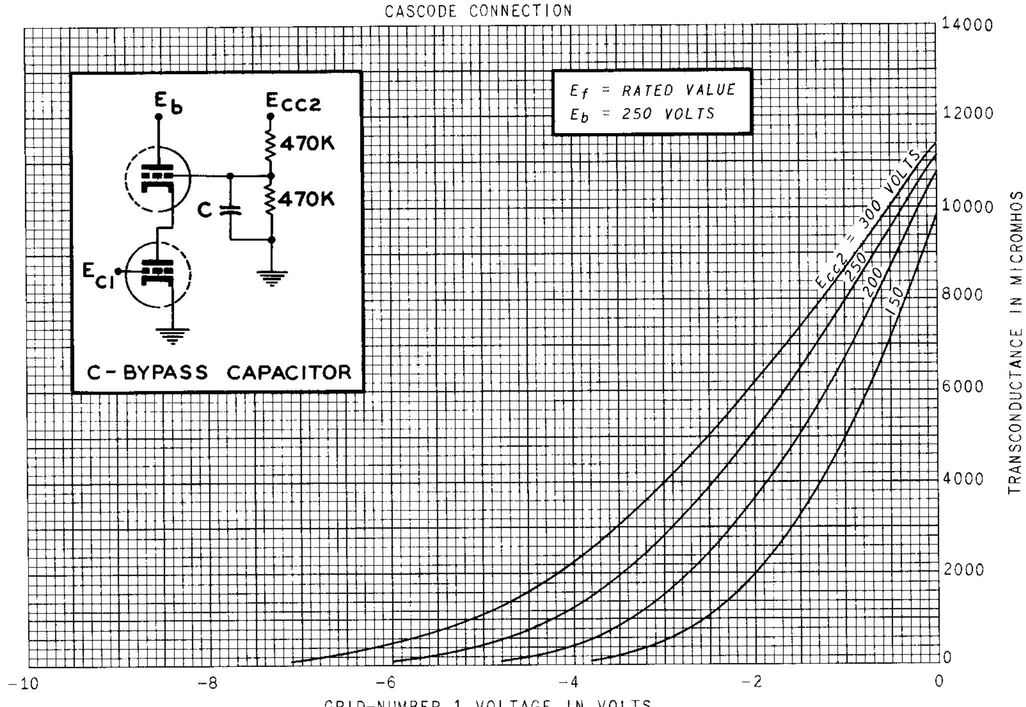
CASCODE CONNECTION



K-55611-TD127-5 SEPTEMBER 26, 1960

AVERAGE TRANSFER CHARACTERISTICS

CASCODE CONNECTION



K-55611-TD127-6 SEPTEMBER 26, 1960